Claims

1. A method for the detection of an increased or decreased disease risk and/or mortality risk and/or an increased or decreased sensitivity to a method of therapy or their side effects, characterized in that after taking a blood or a tissue sample, respectively, said blood or tissue, respectively, is examined for the presence of a polymorphism in at least one sterol regulator element binding protein (SREBP) wherein the presence of a polymorphism is determined at amino acid and/or nucleic acid level.

2. The method of claim 1, characterized in that said SREBP is selected from the group comprising SREBP-1 and SREBP-2.

3. The method according to claim 1 or 2, characterized in that said polymorphism leads an increased or decreased activation of genes of the lipid metabolism, in particular of the cholesterol metabolism.

4. The method of claim 3, characterized in that said polymorphism leads to an increased or decreased plasma concentration of at least one lipid, in particular cholesterol.

5. The method of any one of claims 1 to 4, characterized in that the presence of a polymorphism is determined at nucleic acid level.

6. The method of claim 5, characterized in that said polymorphism shows a recognition site for a cleavage site lying within said polymorphism and that the examination is done using said recognition sequence.

7. The method of claim 6, characterized in that said recognition sequence is a recognition sequence for *Xmn I* or *Msp I* i.e GAANNNNTTC or CCGG, wherein N can be any nucleotide.

8. The method of claim 7, characterized in that the examination is done using a SREBP sequence or a SREBP partial sequence comprising a nucleic acid sequence selected from the group of the following sequences, optionally together with further nucleic acids of the natural vicinity of the corresponding sequence:

SREBP-1, exon 18c (Seq. Id. No. 3):

GCACCTAGGGAAAGGCTTC

SREBP-2, exon 10 (Seq. Id. No. 7):

CTGCTGCCGGCAACCTACA

9. The method of claim 6, characterized in that the examination is done using a SREBP sequence or a SREBP partial sequence comprising the following nucleic acid sequence, optionally together with further nucleic acids of the natural vicinity of said sequence:

SREBP-2, exon 6: CTGAAGAAG

10. The method of any one of claims 1 to 4, characterized in that the detection of the presence of a polymorphism is done at amino acid level.

11. Method of any one of claims 1 to 9, characterized in that after taking blood or a tissue sample, respectively, and DNA extraction at least a fragment of a SREBP exon comprising a polymorphism is amplified using two oligonucleotide sequences wherein said polymorphism is characteristic for an increased or decreased activation of genes of the lipid metabolism, in particular cholesterol metabolism, and that the product of said amplification is subjected to a digestion with a suitable restriction enzyme or a denaturation and that the digestion products or denaturation products, respectively, are separated electrophoretically.

12. The method of claim 10 or 11, characterized in that said polymorphism is characteristic for an increased or decreased risk for hypercholesterolemia in humans.

13. The method of claim 11 or 12, characterized in that at least one of said oligonucleotide sequences is located in the intron region which is adjacent to the exon where said polymorphism exists.

14. The method of any one of claims 11 to 13, characterized in that said oligonucleotide sequences are selected from the following pairs or from sequences which hybridize to said pairs under stringent conditions:

S1.18cF (Seq. Id. No. 9):

5'-TTATTTATAATCTGGGTTTTGTGTC-3' and

S1.18cR (Seq. Id. No. 10):

5'-GGGAAGAGCTAAGTTAAAAGTTGTG-3' or

***Eco*R I.S1.18cF** (Seq. Io. No. 11):

5'- CGGAATTCTGAAATTATTTATAATCTGGGTTTTGTGTC -3' and

***Eco*R I.S1.18cR** (Seq. Id. No. 12):

5'-CGGAATTCATCGGGGAAGAGCTAAGTTAAAAGTTGTG-3' or

S2.10P.F (Seq. Id. No. 13):

5'-GCCAGTGACCATTAACACCTTTTGA-3' and

S2.10P.R. (Seq. Id. No. 14):

5'-TCGTCTTCAAAGCCTGCCTCAGTGGCTGGC-3' or

***Eco*RI S2.10F** (Seq. Id. No. 15):

5'-CGGAATTCGCCAGTGACCATTAACACCTTTTGA-3' and

***Eco*RI S2.10R** (Seq. Id. No. 16):

5'-CGGAATTCTGCAGCAAGCCAGTCATCAGCAGCT-3'

***Eco*RI S2.6F** (Seq. Id. No. 17):

5'-CGGAATTCTGGTCTCACTGTGTTTTCACTCATC-3'

***Eco*RI S2.6R** (Seq. Id. No. 18):

5'-CGGAATTCGCCAGGGCTGACAAGCCTTTTCTCA-3'.

15. The method of any one of claims 1 to 14, characterized in that said polymorphism has been detected by amplification and analysis of a SREBP sequence of interest, comparison of the exon regions of said sequence of interest to the exon regions of the type of sequence of the corre-

sponding SREBP which is most often found in a population and examination of the sequences with found differences for dysfunction.

16. The method of claim 15, characterized in that the differences lead to a different amino acid and/or in particular to an recognition site for a restriction enzyme.

17. Use of a method of any one of claims 1 to 16 for the detection of an increased or reduced risk for hypercholesterolemia and/or Alzheimer's disease.

18. Use of a method of any one of claims 11 to 16 for the detection of an increased or decreased risk for the occurrence of side effects associated with HIV therapy, in particular the therapy with protease inhibitors.

19. Use of a method of any one of claims 1 to 16 for an increased or decreased mortality risk.

20. DNA and/or RNA chip characterized in that said chip comprises at least one polymorphism in a SREBP, in particular in SREBP-1 and/or SREBP-2.

21. DNA and/or RNA chip of claim 20 characterized in that said polymorphism is a polymorphism in SREBP-1 and/or SREBP-2 as defined in claims 3,4 6, 7, 8 and 9.

22. DNA and/or RNA chip of claim 20 or 21 comprising said polymorphism in presence of other polymorphisms which are diagnostic for the risk assessment of hypercholesterolemia and/or Alzheimer's disease.

23. Use of a polymorphism as defined in one of claims 3, 4, 6, 7, 8 and 9 or of a chip of one of claims 20 to 22 as marker for the determination of an increased or reduced risk for the outbreak of a disease.

24. Use of claim 23, characterized in that said disease is selected from hypercholesterolemia and Alzheimer's disease.

25. Use of a polymorphism as defined in one of claims 3, 4, 6, 7, 8 and 9 or a chip of one of claims 20 to 22 for the determination of an increased or reduced risk for the occurrence of side effects associated with HIV therapy, in particular the therapy with protease inhibitors.

26. Use of a polymorphism as defined in one of claims 3, 4, 6, 7, 8 and 9 or a chip of one of claims 20 to 22 for the determination of a reduced mortality risk.

27. Use of a polymorphism as defined in one of claims 3, 4, 6, 7, 8 and 9 or a chip of one of claims 20 to 22 for the evaluation of a method of treatment for a disease selected from the group comprising hypercholesterolemia, Alzheimer's disease and HIV or for drug screening.

28. Polymorphism characteristic for an increased or reduced risk for hypercholesterolemia in humans characterized in that said polymorphism occurs in a sterol regulator element binding protein (SREBP).

29. Polymorphism of claim 28, characterized in that said polymorphism occurs in the SREBP-1 or SREBP-2.

30. Polymorphism of claim 29, characterized in that said polymorphism shows a recognition site for XmnI or MspI i.e. GAANNNNTTC or CCGG wherein N can be any nucleotide.

31. Polymorphism of claim 30, characterized in that said polymorphism comprises the following sequences:

SREBP-1, exon 18c (Seq. Id. No. 3):

GCACCTAGGGAAAGGCTTC

SREBP-2, exon 10 (Seq. Id. No. 7):

CTGCTGCCGGCAACCTACA